

### **REMARKS**

In view of the following remarks, the Examiner is respectfully requested to withdraw the rejections and allow Claims 1-17, 19 and 48-50, the only claims pending and under examination in this application.

Claims 44-47 have been cancelled without prejudice.

Claim 1 has been amended to clarify the order in which the different fields are applied and to further define the AC tickling field, as suggested by the Examiner during a personal interview held with the undersigned on October 7, 2010. New Claims 49-50 have been added. Support for these amendments and new claims is found throughout the specification and claims as originally filed, for example at paragraphs [0053]-[0054] and [0064], and FIG. 2B. No new matter is added.

The Examiner is thanked for the personal interview held with the with undersigned on October 7, 2010. During the interview, the above amendments were discussed. At the conclusion of the interview, the Examiner agreed that the above amendments would overcome the rejections of record.

### ***Rejections under 35 U.S.C. §103(a)***

Claims 1-8, 10, 11, 17, 19 and 48 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Fox (WO 01/14591) in view of Besse et al. (*Applied Physics Letters*, vol. 80, no. 22, (June 3, 2002) pp. 4199-4201).

The Applicants submit that a *prima facie* case of obviousness has not been established for at least the following reasons:

- the cited references fail to teach or suggest every element of the Applicant's claimed invention;
- there is no apparent reason that would have prompted a person of ordinary skill in the art to combine the references in the manner suggested

- by the Examiner because the proposed combination of references would change the principle of operation of the reference being modified; and
- the Applicants' claimed invention is more than the predictable use of prior art elements according to their established functions.

In making the rejection, the Examiner argues that Fox substantially discloses the Applicants' claimed invention. However, the Examiner concedes that "Fox fails to teach that said detecting comprises applying a DC bias field and an AC tickling field." Office Action, pg. 3, lines 22-23. To remedy this deficiency, the Examiner relies upon the asserted teachings of Besse. Specifically, the Examiner alleges that "Besse teaches detection and characterization of a single magnetic bead using silicon Hall sensor. The method of detection is applying a DC bias field perpendicular to the sensor and an AC field in either z (H2) direction of x direction (H1)." Office Action, pg. 3, line 24 to pg. 4, line 1.

The Applicants contend that a *prima facie* case of obviousness has not been established because the cited references fail to disclose or suggest every element of the Applicants' claimed invention.

The Applicants' claimed invention includes the element that the "detecting comprises applying a DC bias field and an AC tickling field." In addition, the instant Specification discloses as follows:

The operation of a spin valve detector (FIGS. 2A and 2B) is described as follows: 1) The magnetic nanoparticle under a DC bias field ( $H_b$ ) generates a magnetic field around it. 2) The magnetic field will affect the resistance of a spin valve closely underneath it. 3) Application of an AC tickling field ( $H_t$ ) will force the moment of [the] particle to oscillate, resulting in an oscillating MR signal from [the] spin valve. Note that in the in-plane mode the spin valve detector signal due to the magnetic nanoparticle has the same frequency  $f$  as the AC tickling field  $H_t$ , while in the vertical mode the signal has twice the frequency of  $H_t$ .

Specification, pg. 14, ¶ [0054].

Thus, the Applicants' claimed element of applying an AC tickling field causes the magnetic moment of the magnetic particles to oscillate, resulting in a detectable oscillation in the magnetoresistance (MR) ratio.

In contrast, Besse discloses two detection methods that rely only on application of a DC bias field to generate a detectable signal. The first method is shown in FIG. 3 of Besse, reproduced below.

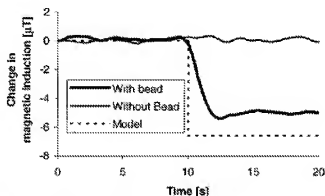


FIG. 3. Detection of the bead, based on the apparent susceptibility measurement of Fig. 2. An ac field  $H_1$  is applied in the z direction. After 10 s, a bias magnetic field  $H_0 = 13$  kA/m is switched on. The Hall voltage is recorded at frequency  $f_0$  ( $I_0 = 0.3$  mA,  $H_1 = 0.9$  kA/m,  $\tau = 1$  s,  $\Delta f = 0.12$  Hz, and  $f_0 = 520$  Hz).

In Besse's first method, an AC field ( $H_1$ ) is applied in the z-direction. However, no detectable signal is generated, as shown in FIG. 3 where the signal with bead and without bead are not significantly different from each other and show approximately zero change in magnetic induction from 0-10 seconds. Next in Besse's method, after 10 seconds, a DC bias magnetic field ( $H_0$ ) is switched on and a detectable signal is recorded, as shown in FIG. 3 by the change in magnetic induction from 10-20 seconds. Thus, the method disclosed by Besse only relies on applying a DC bias field to generate a detectable signal. As such, Besse does not teach or suggest the Applicants' claimed element that "said detecting comprises applying a DC bias field and an AC tickling field."

The second method disclosed by Besse is shown in FIG. 4, reproduced below.

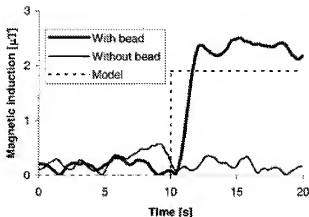


FIG. 4. Detection of the bead, based on the second-harmonic measurement. An ac field  $H_1$  is applied in the y direction. After 10 s, a bias magnetic field  $H_0 = 3.7 \text{ kA/m}$  is switched on. The Hall voltage is recorded at frequency  $2f_0$  ( $I_0 = 0.3 \text{ mA}$ ,  $H_1 = 62 \text{ kA/m}$ ,  $\tau = 1 \text{ s}$ ,  $\Delta f = 0.12 \text{ Hz}$ , and  $f_0 = 520 \text{ Hz}$ ).

In Besse's second method, as AC field ( $H_1$ ) is applied in the x-direction. However, similar to Besse's first method, no detectable signal is generated, as shown in FIG. 4 where the signal with bead and without bead are not significantly different from each other and show approximately zero change in magnetic induction from 0-10 seconds. Next in Besse's second method, after 10 seconds, a DC bias magnetic field ( $H_0$ ) is switched on and a detectable signal is recorded, as shown in FIG. 4 by the change in magnetic induction from 10-20 seconds. Thus, the method disclosed by Besse only relies on applying a DC bias field to generate a detectable signal. As such, Besse does not teach or suggest the Applicants' claimed element that "said detecting comprises applying a DC bias field and an AC tickling field."

As such, the Applicants submit that a *prima facie* case of obviousness has not been established because the cited references do not teach or suggest every element of the Applicants' claimed invention. Therefore, the Applicants respectfully request withdrawal of this rejection.

Furthermore, the Applicants contend that a *prima facie* case of obviousness has not been established because there is no apparent reason that would have prompted a person of ordinary skill in the art to combine the references in the manner suggested by the Examiner because the proposed combination of the cited references would change the principle of operation of the reference being modified.

As stated in MPEP §2143.01(VI), if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810 (CCPA 1959).

Fox discloses as follows:

to the biomolecule. In several preferred embodiments, the invention uses a sensitive magnetic sensor, such as a giant magnetoresistive ratio sensor (GMR), for the detection of magnetically labeled biomolecules. A method of biomolecule detection according to one preferred

Fox, pg. 6, lines 17-19.

Giant magnetoresistance (GMR) is based on the quantum mechanical magnetoresistance effect observed in thin film structures composed of alternating ferromagnetic and non magnetic layers.<sup>1</sup> Thus, the principle of operation of the sensors disclosed by Fox is based on quantum mechanics.

In contrast, Besse discloses the detection of magnetic beads using a Hall sensor. Besse, Abstract. Hall sensors are based on classical physics and produce a signal due to the production of a voltage difference across an electrical conductor, transverse to an electric current in the conductor and a magnetic field perpendicular to

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<sup>1</sup> Walter A. Harrison, Applied Quantum Mechanics, World Scientific Publishing Co. Pte. Ltd. (2000), Chapter 2.3, pp. 24-31; see also "Giant magnetoresistance", available online at [http://en.wikipedia.org/wiki/Giant\\_magnetoresistance](http://en.wikipedia.org/wiki/Giant_magnetoresistance) (accessed Sept. 9, 2010).

the current.<sup>2</sup> Moreover, Besse specifically distinguishes the disclosed Hall sensors from giant magnetoresistance arrays. For instance, Besse discloses as follows:

tively attached on a surface. Different approaches are proposed: the beads can be detected by superconducting quantum interference device sensors,<sup>9</sup> giant magnetoresistance arrays,<sup>10</sup> or by atomic force microscopy.<sup>11</sup> These methods require complicated and costly technologies.

In this letter, we demonstrate the detection and characterization of a single magnetic microbead using a silicon Hall sensor fabricated in a standard complementary metal-oxide-semiconductor (CMOS) technology. This will allow one to fabricate dense arrays of sensors, together with their front-end electronics, on a single silicon chip at a reasonably low cost.

Besse, pg. 4199, col. 1, lines 13-24.

Consequently, the Examiner's suggested combination of the teachings of Fox and Besse would change the principle of operation of Fox from being based on the quantum mechanical giant magnetoresistance effect to being based on the classical physics Hall effect. As such, a person of ordinary skill in the art would have no apparent reason to combine the references in the manner suggested by the Examiner because the proposed combination of the cited references would change the principle of operation of the reference being modified.

Therefore, in making this rejection of the claims over Fox in view of Besse, the Examiner has improperly combined the Fox and Besse references because the proposed combination of references would change the principle of operation of the Fox reference. As such, a *prima facie* case of obviousness has not been established and the Applicants respectfully request withdrawal of this rejection.

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<sup>2</sup> R.S. Popovic, Hall Effect Devices, Second Edition, Institute of Physics Publishing Ltd. (2004), Chapter 1, pp. 2-4; see also "Hall effect sensor", available online at [http://en.wikipedia.org/wiki/Hall\\_sensor](http://en.wikipedia.org/wiki/Hall_sensor) (accessed Sept. 9, 2010).

Furthermore, even assuming for the sake of argument that the cited references may be combined as suggested by the Examiner, the Applicants additionally contend that a *prima facie* case of obviousness has not been established because the Applicants' claimed invention is more than the predictable use of prior art elements according to their established functions.

As described above, the disclosure of Besse indicates that no detectable signal is generated when an AC field is applied in either the z- or x-directions and that a detectable signal is only generated when a DC bias field is applied. As such, a person of ordinary skill in the art would not expect the application of an AC tickling field, as in the presently claimed invention, to have any detectable effect. Consequently, a person of ordinary skill in the art, absent the teachings of the present specification, would not have expected the combined teachings of Fox and Besse to teach or suggest with any predicted success the Applicants' claimed element that the detecting includes applying a DC bias field and an AC tickling field.

Accordingly, in view of the above, the Applicants contend that the Examiner has not established a *prima facie* case that the claimed invention would have been obvious to a person of ordinary skill in the art at the time of invention. As such, the Applicants respectfully request withdrawal of the 35 U.S.C §103(a) rejection of Claims 1-8, 10, 11, 17, 19 and 48.

Claims 1-8, 10, 11, 14-17, 19 and 48 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Coehoorn et al. (WO 03/054523) in view of Besse et al. (*Applied Physics Letters*, vol. 80, no. 22, (June 3, 2002) pp. 4199-4201.

In making this rejection, the Examiner asserts that Coehoorn substantially discloses the Applicants' claimed invention. Office Action, pg. 5, lines 17-22. However, the Examiner concedes that "Coehoorn fails to teach said detecting comprises applying a DC bias field and an AC tickling field." Office Action, pg. 6, lines 1-2. To remedy this deficiency, the Examiner cites Besse for its alleged teaching of "detection and

characterization of a single magnetic bead using silicon Hall sensor,” asserting that the “method of detection is applying a DC bias field perpendicular to the sensor and an AC field in either z (H2) direction of x direction (H1).” Office Action, pg. 6, lines 3-5.

The Applicants contend that a *prima facie* case of obviousness has not been established because the cited references fail to disclose or suggest every element of the Applicants’ claimed invention.

As discussed above, in the methods disclosed by Besse, no detectable signal is generated upon application of an AC field. Besse, FIGS. 3-4. A detectable signal is only generated after a DC bias field is applied. *Id.* Thus, the methods disclosed by Besse only rely on applying a DC bias field to generate a detectable signal. As such, Besse does not teach or suggest the element that “said detecting comprises applying a DC bias field and an AC tickling field,” as required by the Applicants’ claimed invention.

As such, the Applicants submit that a *prima facie* case of obviousness has not been established because the cited references do not teach or suggest every element of the Applicants’ claimed invention. Therefore, the Applicants respectfully request withdrawal of this rejection.

Furthermore, the Applicants submit that a person of ordinary skill in the art, absent the teaching of the present specification, would have no apparent reason to combine the cited references in the manner suggested by the Examiner because the proposed combination of the cited references would change the principle of operation of the reference being modified.

Coehoorn discloses that “The present invention relates to a method and a device for magnetic detection of binding of biological molecules on a biochip.” Coehoorn, Abstract. In addition, Coehoorn discloses as follows:



A magnetoresistive (MR) sensor, for example a giant magnetoresistive (GMR), a tunnel magnetoresistive (TMR) or an anisotropic magnetoresistive (AMR) sensor is provided according to the present invention to read out the information gathered by the biochip 1, thus to read out the presence or absence of the particles and/or to determine or estimate an areal density of the magnetic nanoparticles 15 on the probe area 5.

Coehoorn, pg. 10, lines 9-13.

As discussed above, GMR is based on the quantum mechanical magnetoresistance effect observed in thin film structures composed of alternating ferromagnetic and non magnetic layers.<sup>3</sup> In addition, Coehoorn discloses as follows:

TMR can be observed in systems made of two ferromagnetic electrode layers separated by an isolating (tunnel) barrier. This barrier must be very thin, i.e., of the order of 1nm. Only then, the electrons can tunnel through this barrier, an entirely quantum-mechanical transport process.

\* \* \*

The AMR of ferromagnetic materials is the dependence of the resistance on the angle the current makes with the magnetisation direction. This phenomenon is due to an asymmetry in the electron scattering cross section of ferromagnet materials.

Coehoorn, pg. 10, line 30 to pg. 11, line 7.

As such, similar to Fox, discussed above, the principle of operation of the sensors disclosed by Coehoorn is based on quantum mechanics. In contrast, as discussed above, Besse discloses the detection of magnetic beads using a Hall sensor, which is based on classical physics. Consequently, the Examiner's suggested combination of the teachings of Coehoorn and Besse would change the principle of operation of Coehoorn from being based on quantum mechanical magnetoresistive effects to being based on the classical physics Hall effect. As such, a person of ordinary skill in the art would have no apparent reason to combine the references in the

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<sup>3</sup> Walter A. Harrison, Applied Quantum Mechanics, World Scientific Publishing Co. Pte. Ltd. (2000), Chapter 2.3, pp. 24-31; see also "Giant magnetoresistance", available online at [http://en.wikipedia.org/wiki/Giant\\_magnetoresistance](http://en.wikipedia.org/wiki/Giant_magnetoresistance) (accessed Sept. 9, 2010).

manner suggested by the Examiner because the proposed combination of the cited references would change the principle of operation of the reference being modified.

Therefore, in making this rejection of the claims over Coehoorn in view of Besse, the Examiner has improperly combined the Coehoorn and Besse references because the proposed combination of references would change the principle of operation of the Coehoorn reference. As such, a *prima facie* case of obviousness has not been established and the Applicants respectfully request withdrawal of this rejection.

Furthermore, even assuming for the sake of argument that the cited references may be combined as suggested by the Examiner, the Applicants additionally contend that a *prima facie* case of obviousness has not been established because the Applicants' claimed invention is more than the predictable use of prior art elements according to their established functions.

As described above, Besse discloses that no detectable signal is generated when an AC field is applied in either the z- or x-directions and that a detectable signal is only generated when a DC bias field is applied. As such, a person of ordinary skill in the art would not expect the application of an AC tickling field, as in the presently claimed invention, to have any detectable effect. Consequently, a person of ordinary skill in the art, absent the teachings of the present specification, would not have expected the combined teachings of Coehoorn and Besse to teach or suggest with any predicted success the Applicants' claimed element that the detecting includes applying a DC bias field and an AC tickling field.

Accordingly, in view of the above, the Applicants contend that the Examiner has not established a *prima facie* case that the claimed invention would have been obvious to a person of ordinary skill in the art at the time of invention. As such, the Applicants respectfully request withdrawal of the 35 U.S.C §103(a) rejection of Claims 1-8, 10, 11, 17, 19 and 48.

Claims 1-8, 10, 11, 17, 19 and 48 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Baselt (U.S. Patent No. 5,981,297) in view of Besse et al. (*Applied Physics Letters*, vol. 80, no. 22, (June 3, 2002) pp. 4199-4201.

In making this rejection, the Examiner asserts that Baselt substantially teaches the Applicants' claimed invention. Office Action, pg. 8, lines 1-6. However, the Examiner concedes that "Baselt fails to teach said detecting comprises applying a DC bias field and an AC tickling field." Office Action, pg. 8, lines 7-8. To remedy this deficiency, the Examiner cites Besse for its alleged teaching of "detection and characterization of a single magnetic bead using silicon Hall sensor," asserting that the "method of detection is applying a DC bias field perpendicular to the sensor and an AC field in either z (H2) direction of x direction (H1)." Office Action, pg. 8, lines 9-11.

The Applicants contend that a *prima facie* case of obviousness has not been established because the cited references fail to disclose or suggest every element of the Applicants' claimed invention.

As discussed above, in the methods disclosed by Besse, no detectable signal is generated upon application of an AC field. Besse, FIGS. 3-4. A detectable signal is only generated after a DC bias field is applied. *Id.* Thus, the methods disclosed by Besse only rely on applying a DC bias field to generate a detectable signal. As such, Besse does not teach or suggest the element that "said detecting comprises applying a DC bias field and an AC tickling field," as required by the Applicants' claimed invention.

As such, the Applicants submit that a *prima facie* case of obviousness has not been established because the cited references do not teach or suggest every element of the Applicants' claimed invention. Therefore, the Applicants respectfully request withdrawal of this rejection.

Furthermore, the Applicants submit that a person of ordinary skill in the art, absent the teaching of the present specification, would have no apparent reason to

combine the cited references in the manner suggested by the Examiner because the proposed combination of the cited references would change the principle of operation of the reference being modified.

Baselt discloses as follows:

The preferred magnetizable label particles are superpara-magnetic iron oxide-impregnated polymer beads and the preferred magnetic field sensor is a magnetoresistive material. By patterning a magnetoresistive film when making the

Baselt, col. 3, lines 60-63.

As such, similar to Fox and Coehoorn, discussed above, the principle of operation of the sensors disclosed by Baselt is based on quantum mechanics. In contrast, as discussed above, Besse discloses the detection of magnetic beads using a Hall sensor, which is based on classical physics. Consequently, the Examiner's suggested combination of the teachings of Baselt and Besse would change the principle of operation of Baselt from being based on quantum mechanical magnetoresistive effects to being based on the classical physics Hall effect. As such, a person of ordinary skill in the art would have no apparent reason to combine the references in the manner suggested by the Examiner because the proposed combination of the cited references would change the principle of operation of the reference being modified.

Therefore, in making this rejection of the claims over Baselt in view of Besse, the Examiner has improperly combined the Baselt and Besse references because the proposed combination of references would change the principle of operation of the Baselt reference. As such, a *prima facie* case of obviousness has not been established and the Applicants respectfully request withdrawal of this rejection.

Furthermore, even assuming for the sake of argument that the cited references may be combined as suggested by the Examiner, the Applicants additionally contend that a *prima facie* case of obviousness has not been established because the

Applicants' claimed invention is more than the predictable use of prior art elements according to their established functions.

As described above, Besse discloses that no detectable signal is generated when an AC field is applied in either the z- or x-directions and that a detectable signal is only generated when a DC bias field is applied. As such, a person of ordinary skill in the art would not expect the application of an AC tickling field, as in the presently claimed invention, to have any detectable effect. Consequently, a person of ordinary skill in the art, absent the teachings of the present specification, would not have expected the combined teachings of Baselt and Besse to teach or suggest with any predicted success the Applicants' claimed element that the detecting includes applying a DC bias field and an AC tickling field.

Accordingly, in view of the above, the Applicants contend that the Examiner has not established a *prima facie* case that the claimed invention would have been obvious to a person of ordinary skill in the art at the time of invention. As such, the Applicants respectfully request withdrawal of the 35 U.S.C §103(a) rejection of Claims 1-8, 10, 11, 17, 19 and 48.

Claims 1-8, 10, 11, 14, 15 and 48 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Terstappen et al (U.S. Patent No. 6,623,983) in view of Besse et al. (*Applied Physics Letters*, vol. 80, no. 22, (June 3, 2002) pp. 4199-4201.

In making this rejection, the Examiner asserts that Terstappen substantially teaches the Applicants' claimed invention. Office Action, pg. 10, lines 1-7. However, the Examiner concedes that "Terstappen fails to teach said detecting comprises applying a DC bias field and an AC tickling field." Office Action, pg. 10, lines 8-9. To remedy this deficiency, the Examiner cites Besse for its alleged teaching of "detection and characterization of a single magnetic bead using silicon Hall sensor," asserting that the "method of detection is applying a DC bias field perpendicular to the sensor and an AC field in either z (H2) direction of x direction (H1)." Office Action, pg. 10, lines 10-12.

The Applicants contend that a *prima facie* case of obviousness has not been established because the cited references fail to disclose or suggest every element of the Applicants' claimed invention.

As discussed above, in the methods disclosed by Besse, no detectable signal is generated upon application of an AC field. Besse, FIGS. 3-4. A detectable signal is only generated after a DC bias field is applied. *Id.* Thus, the methods disclosed by Besse only rely on applying a DC bias field to generate a detectable signal. As such, Besse does not teach or suggest the element that "said detecting comprises applying a DC bias field and an AC tickling field," as required by the Applicants' claimed invention.

As such, the Applicants submit that a *prima facie* case of obviousness has not been established because the cited references do not teach or suggest every element of the Applicants' claimed invention. Therefore, the Applicants respectfully request withdrawal of this rejection.

Furthermore, even assuming for the sake of argument that the cited references may be combined as suggested by the Examiner, the Applicants additionally contend that a *prima facie* case of obviousness has not been established because the Applicants' claimed invention is more than the predictable use of prior art elements according to their established functions.

As described above, Besse discloses that no detectable signal is generated when an AC field is applied in either the z- or x-directions and that a detectable signal is only generated when a DC bias field is applied. As such, a person of ordinary skill in the art would not expect the application of an AC tickling field, as in the presently claimed invention, to have any detectable effect. Consequently, a person of ordinary skill in the art, absent the teachings of the present specification, would not have expected the combined teachings of Terstappen and Besse to teach or suggest with any predicted success the Applicants' claimed element that the detecting includes

applying a DC bias field and an AC tickling field.

Accordingly, in view of the above, the Applicants contend that the Examiner has not established a *prima facie* case that the claimed invention would have been obvious to a person of ordinary skill in the art at the time of invention. As such, the Applicants respectfully request withdrawal of the 35 U.S.C §103(a) rejection of Claims 1-8, 10, 11, 14, 15 and 48.

Claims 9, 12, and 13 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Fox, or Baselt or Coehoorn in view of Besse, and further in view of Berning et al. (U.S. Application Publication No. 2005/0025969).

Claims 9, 12 and 13 depend from Claim 1. As discussed above, Fox, or Baselt or Coehoorn in view of Besse fails to render the instantly claimed invention obvious for at least the following reasons:

- the cited references fail to teach or suggest every element of the Applicant's claimed invention;
- there is no apparent reason that would have prompted a person of ordinary skill in the art to combine the references in the manner suggested by the Examiner because the proposed combination of references would change the principle of operation of the reference being modified; and
- the Applicants' claimed invention is more than the predictable use of prior art elements according to their established functions.

Since Berning was merely cited for its alleged disclosure of "nanoparticles coated with a layer of gold including a magnetic nanoparticle central core, and a coating of gold completely encapsulating the magnetic nanoparticle central core", Berning fails to make up for these deficiencies in Fox, Baselt or Coehoorn and Dames, as discussed above.

Accordingly, the Applicants submit that a *prima facie* case of obviousness has

not been established and respectfully request withdrawal of this rejection.

Claim 16 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Fox, or Baselt in view of Besse, and further in view of Ferreira, et al. (*Journal of Applied Physics* Vol. 93, No. 10, 15 (May 2003), pp. 7281-7286).

Claim 16 depends from Claim 1. As discussed above, Fox or Baselt, in view of Besse, fails to render the instantly claimed invention obvious for at least the following reasons:

- the cited references fail to teach or suggest every element of the Applicant's claimed invention;
- there is no apparent reason that would have prompted a person of ordinary skill in the art to combine the references in the manner suggested by the Examiner because the proposed combination of references would change the principle of operation of the reference being modified; and
- the Applicants' claimed invention is more than the predictable use of prior art elements according to their established functions.

As Ferreira was merely cited for its asserted teaching of "using arrays spin valve sensors to detect magnetically labeled biomolecules", Ferreira fails to remedy the deficiencies in the teachings of Fox or Baselt, in view of Besse, as discussed above.

As such, Claim 16 is not obvious under 35 U.S.C. §103(a) over Fox or Baselt, in view of Besse and Ferreira. Therefore, the Applicants respectfully request withdrawal of this rejection.

Finally, new Claims 49-50 are patentable at least for the reasons provided above.



**CONCLUSION**

Applicants submit that all of the claims are now in condition for allowance, which action is requested. If the Examiner finds that a Telephone Conference would expedite the prosecution of this application, he is invited to telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any other fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-0815, order number STAN-571.

Respectfully submitted,  
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